



[10191/4494]

RECTIFIER SYSTEM HAVING DIFFERENT RECTIFIER ELEMENTS

BACKGROUND INFORMATION

Rectifiers for motor vehicle three-phase generators are normally equipped with 6 silicon diodes which are connected to form a bridge. It is a characteristic of all of these
5 rectifier configurations that they generally are either equipped only with high-blocking diodes, i.e., diodes without a voltage limiting function, or Zener diodes, i.e., diodes having a voltage limiting function. In doing so, only semiconductor diodes of the same type are used. An exception
10 is rectifiers in which an additional pair of diodes is connected to the star point of the generator stator winding. For reasons of cost, the star point diodes in this case are sometimes designed as high-blocking diodes while, however, the phase diodes are designed as Zener diodes.

15 Rectifiers having 7, 8, 12, 14 or more diodes are also in use. In doing so, the number of diodes is then doubled from 6 to 12, when high temperature or current demands in particular must be met. The diodes are then connected in such a way that
20 two diodes are connected in parallel.

The level of the rectified signal, i.e., the generator current or the generator voltage, shows a characteristic variation which is a function of different influence factors. This
25 variation is known as generator ripple. The reverse recovery time t_{rr} of the diodes makes a significant contribution to generator ripple. Reverse recovery time t_{rr} is a form of switching time.